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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,875	11/20/2003	Robert H. Feldmeier	706.003PA	9384
25891	7590	11/03/2005	EXAMINER	
BERNHARD P. MOLLDREM, JR. 224 HARRISON STREET SUITE 200 SYRACUSE, NY 13202			MYERS, ADAM C	
			ART UNIT	PAPER NUMBER
			1761	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,875

Applicant(s)

FELDMIEER, ROBERT H.

Examiner

Adam C. Myers

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 21-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 19 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/20/03.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Appendix A: Handwritten note

DETAILED ACTION

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not). In this case, there is no claim 19.

Misnumbered claims 20-31 have been renumbered 19-30.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-20, drawn to a process for ultrahigh temperature pasteurization, classified in class 426, subclass 522.
- II. Claims 21-30, drawn to a UHT pasteurization arrangement, classified in class 422, subclass 1.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case invention II is capable of performing a function other than that described in the process claims. Such a function is the high temperature treatment of

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non-food material. Also, the process of group I can be practiced by another materially different apparatus, for instance a device without a balance tank.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Bernhard Molldrem on October 21st, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 21-30 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

Claims 6 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite a limitation of "about less than 20

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degrees F.” The limitation fails to particularly point out what is the upper bound of the range described by the claim.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites a limitation of “substantially sixty seconds.” The limitation does not particularly point out the length of time being described in the instant claim.

Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite a limitation of below or no greater than about ...feet per second. The limitation fails to particularly point out the subject matter, as there no defined up bound to the claimed ranges.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 7, 9, 11, 13, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by McElroy (US Pat 3,567,470). McElroy has disclosed a milk sterilization process, the process comprising supplying untreated milk from a supply (10) to a raw side of a first regenerator press (12), heating the temperature to an intermediate temperature by way of a heater (16), flowing the milk through a timing tube (18) for a

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predetermined amount of time, flowing the milk through a raw side of a second regenerator press (34) to further heat the milk, followed by flowing the milk through a heater unit (36), the heater unit being a medium-to-product heater, in which the medium is supplied in counter flow to the product stream. After passing the milk through the heater (34), the milk is held at approximately the same temperature as the temperature of the milk exiting the heater, before passing the milk through a treated side of the second regenerator press, heating the milk passing through the raw side in counter flow, then later passing the treated milk through a treated side of the first regenerator press, whereby the untreated milk entering on the raw side is likewise heated by counter flow. The milk is then further processed by a heat exchanger (52) in order to cool the milk for packaging.

In the medium-to-product heater, the temperature difference between the milk and the heating medium is about 20°F at any point of reference (col. 3, line 56 to col. 4, line 23). This would inherently include temperatures slightly below 20°F.

Given that the limitations of claim 11 are substantially identical to the limitations of the instant claim 1, the disclosure presented above rejecting claim 1 would also anticipate claim 11.

In regard to claim 6, the temperature of the untreated milk leaving the raw side of the second regenerator press is 240-260°F, and the temperature of the treated milk entering the treated side of the second regenerator press is 270-280°F. Thus, a range of 10-40°F is disclosed between the temperature of the untreated milk leaving the raw side of the second regenerator press and the treated milk entering the treated side of

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the second regenerator press. By presenting a range (10-20°F) that overlaps the range of the instant claim (<20°F), the disclosure would anticipate the limitation set forth in the instant claims (col. 3, line 56 to col. 4, line 23).

In regard to claim 7, McElroy has taught that the intermediate temperature must be between 161.5°F and 190°F (col. 2, lines 41-44). Given the limitation of the instant claim falls within this range, the disclosure would anticipate the limitation.

In regard to claim 9, McElroy has disclosed a homogenizer (32), through which the milk flows prior to entering the raw side of the second regenerator press (34).

In regard to claim 13, McElroy has disclosed a process for milk sterilization, the process comprising the steps of supplying milk through a raw side of a regenerative press (34) to preheat the milk prior to sterilization treatment; flowing the milk into a medium-to-product heater (36), thus heating the milk to a predetermined temperature, performing the heating by counter flow; holding the milk at the exit temperature for a predetermined amount of time; flowing the milk through a treated side of the regenerator press (34) in counter flow to the untreated milk, heating the untreated milk during counter flow; and further processing the milk by a heat exchanger (52) to cool the milk in preparation of packaging. In the medium-to-product heater, the temperature difference between the milk and the heating medium is about 20°F at any point of reference (col. 3, line 56 to col. 4, line 23). This would inherently include temperatures slightly below 20°F.

In regard to claim 18, the temperature of the untreated milk leaving the raw side of the second regenerator press is 240-260°F, and the temperature of the treated milk

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entering the treated side of the second regenerator press is 270-280°F. Thus, a range of 10-40°F is disclosed between the temperature of the untreated milk leaving the raw side of the second regenerator press and the treated milk entering the treated side of the second regenerator press. By presenting a range (10-20°F) that overlaps the range of the instant claim (<20°F), the disclosure would anticipate the limitation set forth in the instant claims (col. 3, line 56 to col. 4, line 23).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2-5, 12, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McElroy. McElroy is taken as cited above. McElroy does not recite the limitations regarding medium-to-product ratios or temperature differentials at the sides of the medium-to-product heater. The limitations lack an inventive step for the reason that the values set forth in the instant claims would produce obvious and

expected results when applied to a basic heat transfer equation. Examiner has performed the calculations of a heat exchanging process, using the temperature ranges of McElroy and well-known and universally accepted values for constants, with the applicants ratio for volumetric flow rates (2:1) to illustrate that such a ratio would produce temperatures that are obvious and expected. Such a temperature would be one that is less than the inlet temperature of the medium (300°F, col. 4, lines 15-16), but remains greater than the temperature of the milk entering the heater in counter flow (260°F, col. 3, lines 67-69). Referring to Appendix A, one can see that the disclosed temperatures, accepted constants, and applicants ratio of volumetric flow rates results in a temperature of 289.71°F. Speaking in terms of heat transfer, the temperature shows that heat is being transferred to the milk for the entire length of the heater (36), and the ratio defines that more of the heating medium is flowing through the heater than product, and thus more heat is available for transfer. Given that this is the goal of the invention of McElroy, the calculations of Appendix A illustrate that the instant claims 2, 3, 12, 14, and 15 lack an inventive step over the prior art. Additionally, it would have been obvious to one of ordinary skill in the art to incorporate the ratio into the invention of McElroy, since both are directed to methods for treating a liquid food product, since McElroy already included the counter current heat exchange and since the ratio would provide more of the heating medium to the heater, and thus more available heat energy for transfer to the milk for sterilization. Furthermore, McElroy teaches that high temperature differentials lead to "baking on" of the milk onto the sidewalls (col. 4, line 5). It would have been obvious to further reduce the "baking on" by decreasing the

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temperature differentials, hereby necessitating an increased flow rate of the heat transfer fluids to provide the required amount of heating. This is illustrated by the 3 times faster flow in the second regenerator press, as compared to the first regenerator press (col. 4, line 1).

In regard to those claims reciting a limitation of the temperature gaps, the instant claims 4, 5, 16, and 17, the relationship of the flow rates and the temperature differentials are inversely proportional, as shown in the equation solution of Appendix A (line 1). McElroy teaches differentials of about 20°F at any point along the heater, but does not recite the specific temperature differentials of the instant claims. Given the proportionality, the temperature differentials can be decreased by increasing the flow rates. Thus, to produce the temperature differentials of the instant claims, one of ordinary skill in the art would have been provided with the proper motivation to do so because of the proportionality. Increasing the flow rate, and thus decreasing the temperature gaps, would also allow for increased production. Thus, it would have been obvious to one of ordinary skill in the art to increase the flow rates of McElroy to decrease the temperature differentials, since the disclosed temperature differential of McElroy would allow for such an increase, and the increase flow rate would allow for greater production.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over McElroy. McElroy is taken as cited above. McElroy does not recite the limitation that the holding tube (18) holds the milk for substantially sixty seconds. According to McElroy,

"A holding tube of this type is required for pasteurization which in essence requires that the milk pass at the pasteurization temperature through a tube of predetermined inside diameter and

length so as to assure that the pasteurization temperature is maintained for a prescribed time period. In most cases that holding tube is so dimensioned as to assure that a sixteen second time span is required for product passage through the tube."

The above disclosure notes that tube diameter and length are determining factors in the complete sizing of the well-known holding tube. Additionally, McElroy has disclosed a flow diversion valve (20) for diverting raw milk that falls below a minimum temperature. By sizing the holding tube for a longer holding time, the milk being processed spends a longer time away from direct heating mediums, and thus if the heating means is underperforming, and not properly heating the milk to a suitable level, there will be more milk returned to the raw supply by the diversion valve. Given McElroy has disclosed that it is well known to size the holding tube according to a necessary holding time, it would have been obvious to one of ordinary skill in the art to size the holding tube of McElroy with a 60 second holding time, since the extra holding time would require more heat being imparted to the milk, and thus, the extra holding time would be a greater indicator of under-performing heaters prior to the holding tube.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over McElroy in view of Colorado.edu. McElroy is taken as cited above. McElroy does not recite that the regenerator presses are tube-in-tube counter flow heat exchangers. The tube-in-tube heat exchanger is spatially efficient, since the tubes are concentric and take up essentially half the space of counter flow heat exchangers that employ side-by-side heat exchange. Colorado.edu has disclosed a tube-in-tube heat exchanger with the concentric tube design, the heat exchanger further comprising a coil design to maximize heat transfer over minimum volume.

It would have been obvious to one of ordinary skill in the art to incorporate the tube-in-tube heat exchanger of Colorado.edu into the invention of McElroy since both are directed to counter flow heat exchange, since McElroy has already included a counter flow regenerator press but simply did not describe it in detail, since tube-in-tube heat exchangers were considered a type of counter flow heat exchanger, and since the tube-in-tube heat exchanger of Colorado.edu provided a more spatially efficient means for heat exchange, the process could be performed in a smaller area.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McElroy in view of Appendix A. The references are taken as cited above. The references do not recite a flow velocity below nine feet per second, or less than six feet per second. However, one of ordinary skill in the art has been provided ample motivation to set a flow velocity so that heat transfer can be maximized with production of the process of McElroy. Additionally, Appendix A illustrates that temperature and flow are proportional, but the ratio of the product flow to the medium flow is of greater importance than the numerical value of the product flow. The instant claims lack an inventive step over the prior art, as the flow rate is a design choice based on the production needs of one performing the process of McElroy. Given McElroy has disclosed that the milk is flowing at a suitable velocity for performing the sterilization, one of ordinary skill would have been motivated to incorporate a velocity that provides proper production goals, but maintains the level of sterilization of the process.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam C. Myers whose telephone number is 571-272-6466. The examiner can normally be reached on Monday-Friday, 8am-4: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

acm

Adam C Myers

Drew Becker
DREW BECKER
PRIMARY EXAMINER

10-27-05